

INTERNATIONAL SEARCH REPORT

Information on patent family members

Date and Application No
PCT/US 96/20864

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
DE 2521719 A	25-11-76	US 4116198 A		26-09-78
WO 9426228 A	24-11-94	AU 676329 B		06-03-97
		AU 6829694 A		12-12-94
		CA 2162395 A		24-11-94
		EP 0697841 A		28-02-96
		JP 9501328 T		10-02-97
US 5401272 A	28-03-95	US 5441498 A		15-08-95
WO 9534259 A	21-12-95	US 5562703 A		08-10-96
		AU 3137495 A		05-01-96

INTERNATIONAL SEARCH REPORT

Inter. and Application No.
PCT/US 96/20864

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 34259 A (DESAI ASHVIN H) 21 December 1995 see abstract; figure 17 see page 8, line 22 - page 9, line 18 see page 11, line 37 - page 13, line 14 see page 17, line 15 - page 22, line 10 -----	21,27-40
1		

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 96/20864

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61B17/39

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 25 21 719 A (DELMA ELEKTRO MED APP) 25 November 1976 see page 8, line 23 - page 9, line 20 see page 13, line 1 - line 28; figures 1,7,8 ---	1-20, 22-26
Y	WO 94 26228 A (THAPLIYAL & EGgers ;EGGERS PHILIP E (US); THAPLIYAL HIRA V (US)) 24 November 1994 see abstract; figure 1 see page 17, line 3 - page 18, line 12 ---	1-20
X	US 5 401 272 A (PERKINS RODNEY C) 28 March 1995	21,27-40
Y	see abstract; figures see column 2, line 59 - column 4, line 35 ---	22-26
	-/-	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- 'A' document defining the general state of the art which is not considered to be of particular relevance
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- 'O' document referring to an oral disclosure, use, exhibition or other means
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Date of the actual completion of the international search

20 May 1997

Date of mailing of the international search report

23.05.97

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Zeinstra, H

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FIGURE 16A

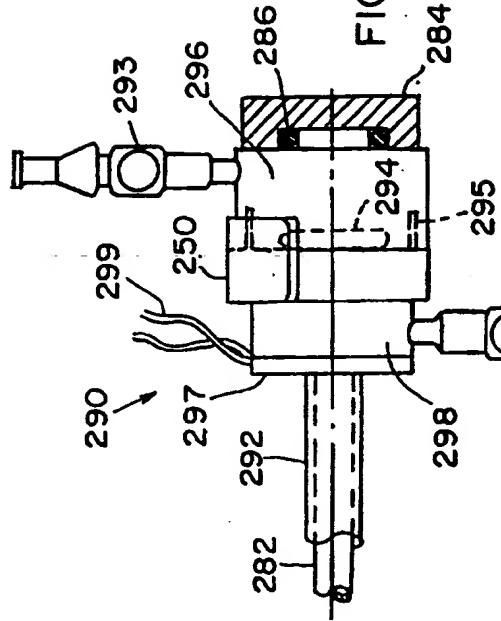
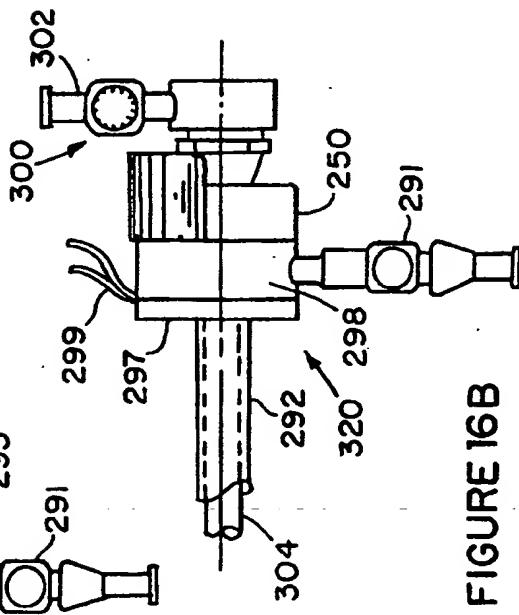
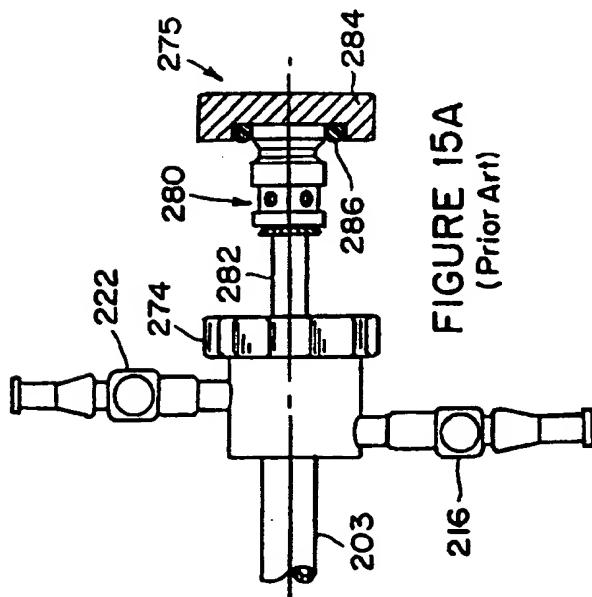
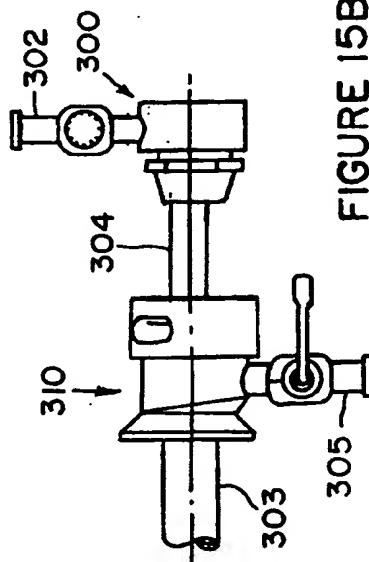


FIGURE 16B

FIGURE 15A
(Prior Art)FIGURE 15B
(Prior Art)

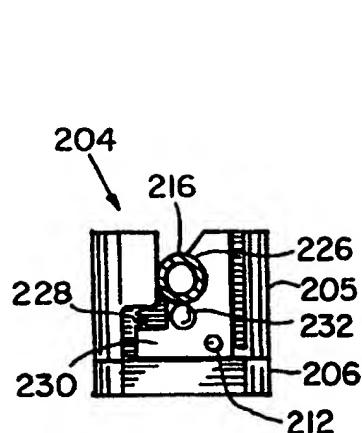


FIGURE 12

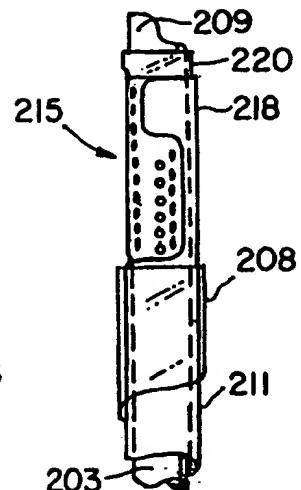


FIGURE 13A

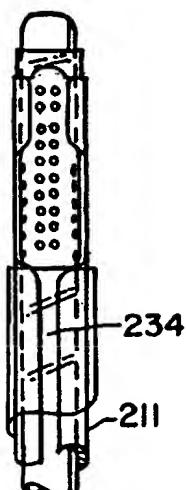


FIGURE 13B

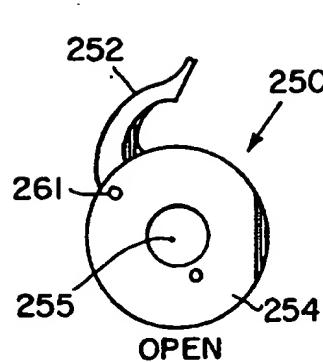


FIGURE 14A

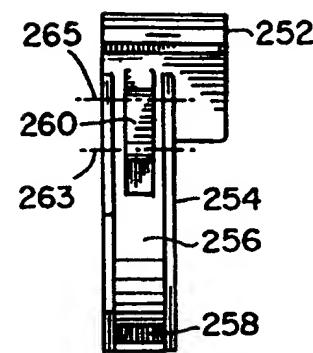


FIGURE 14C

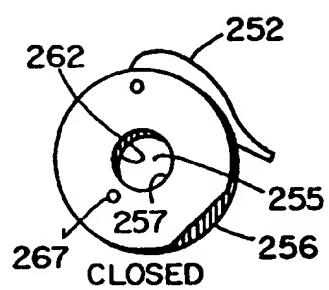


FIGURE 14B

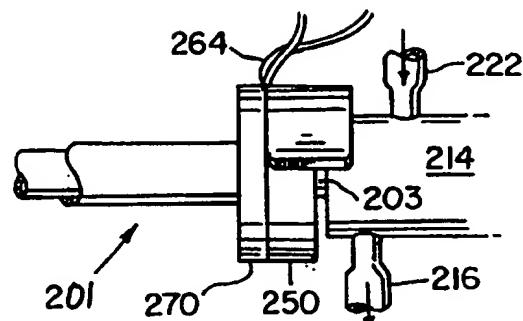
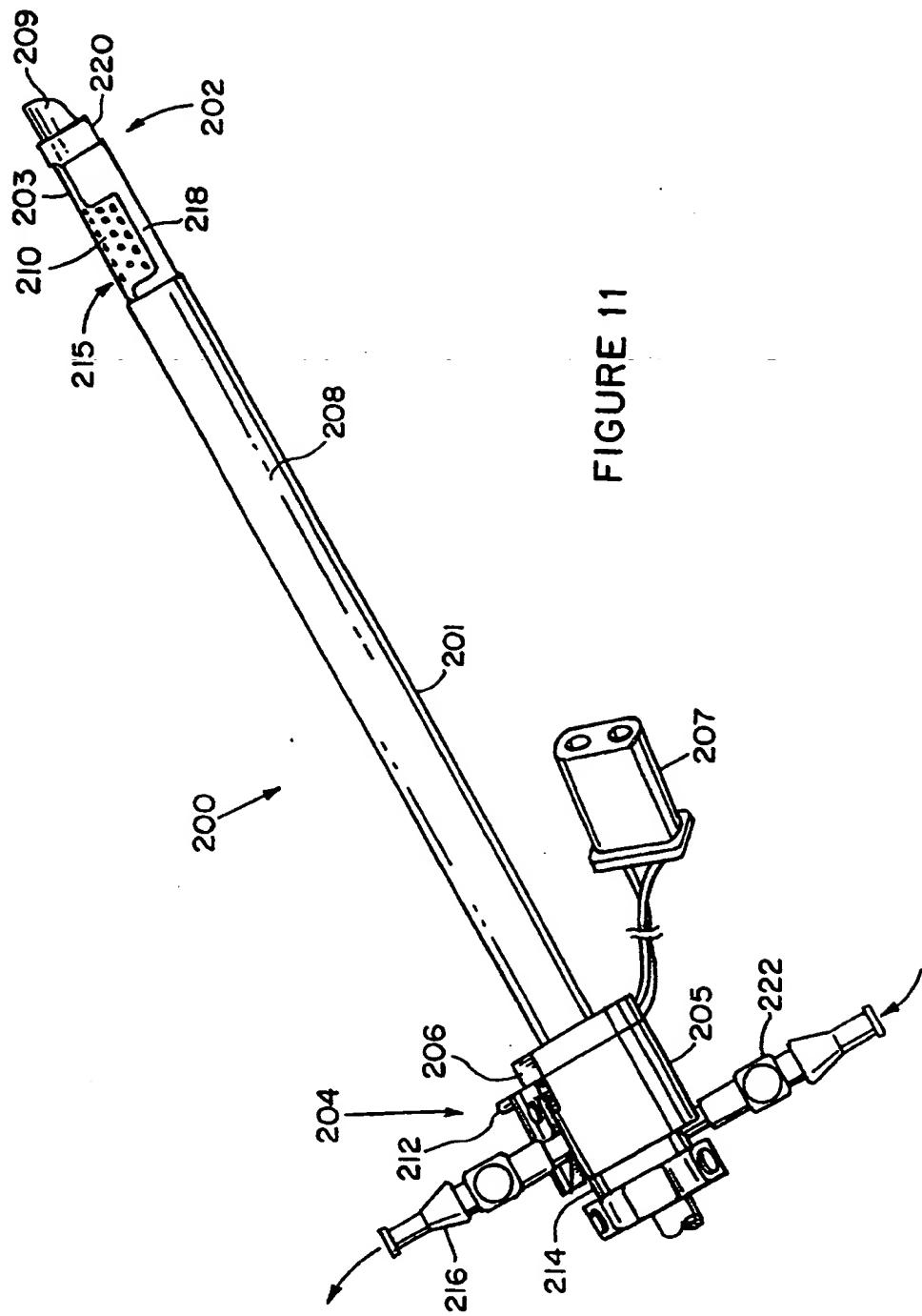


FIGURE 14D



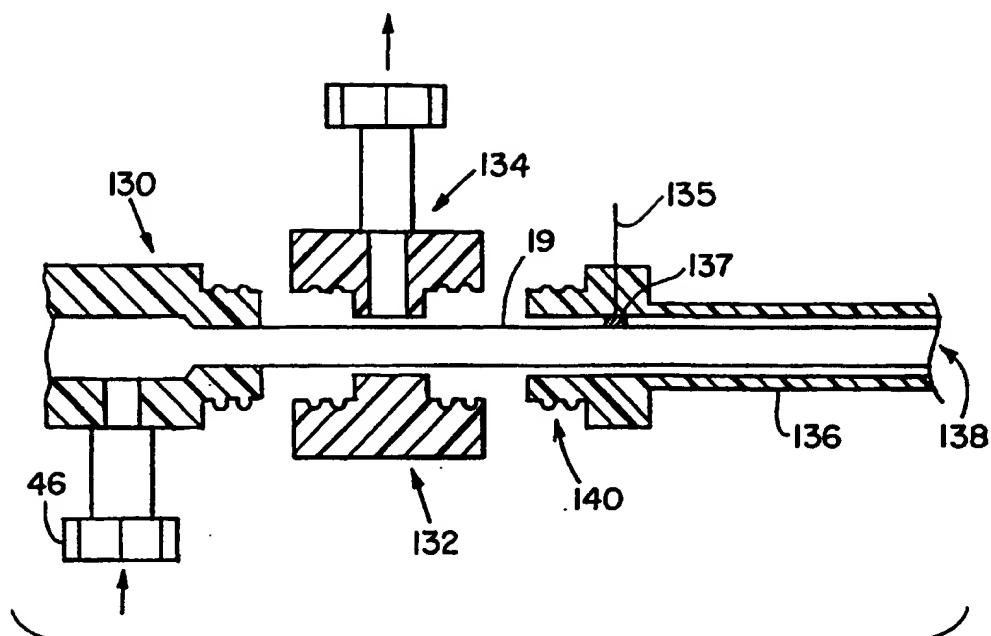


FIGURE 8

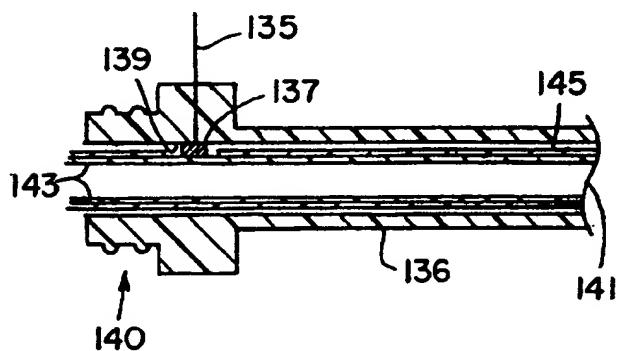


FIGURE 9

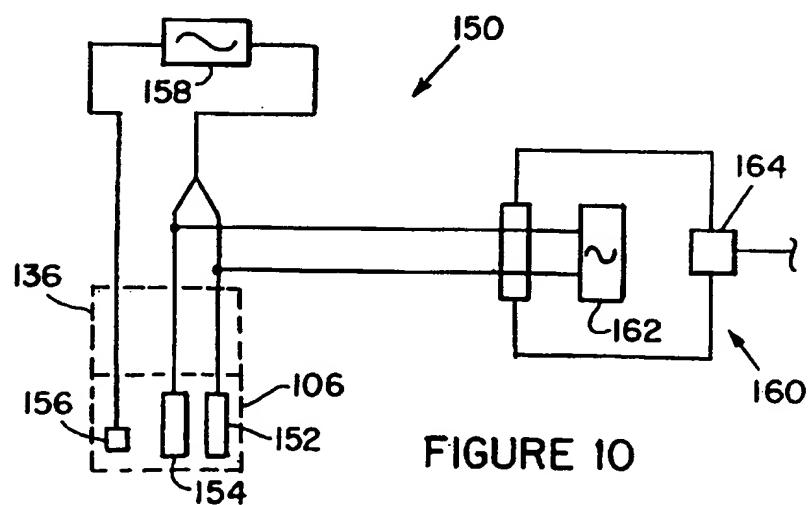


FIGURE 10

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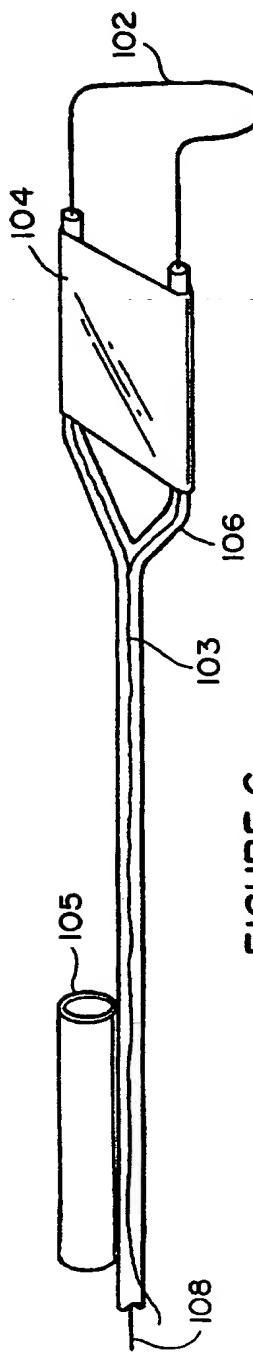
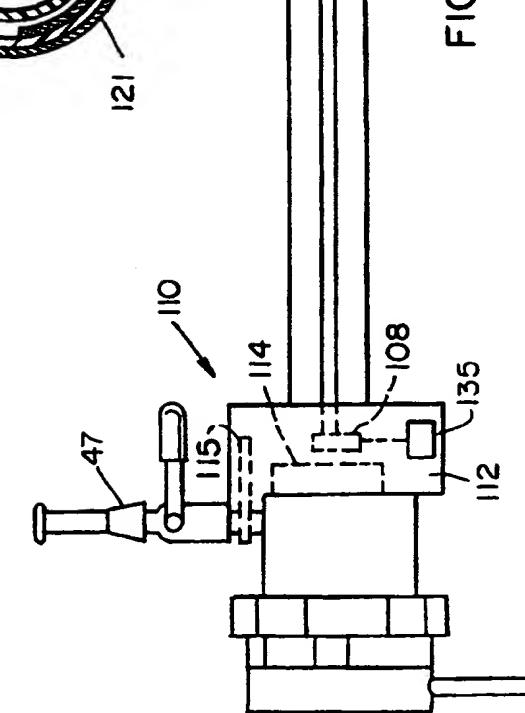
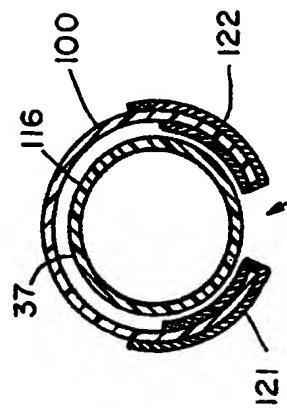


FIGURE 7B



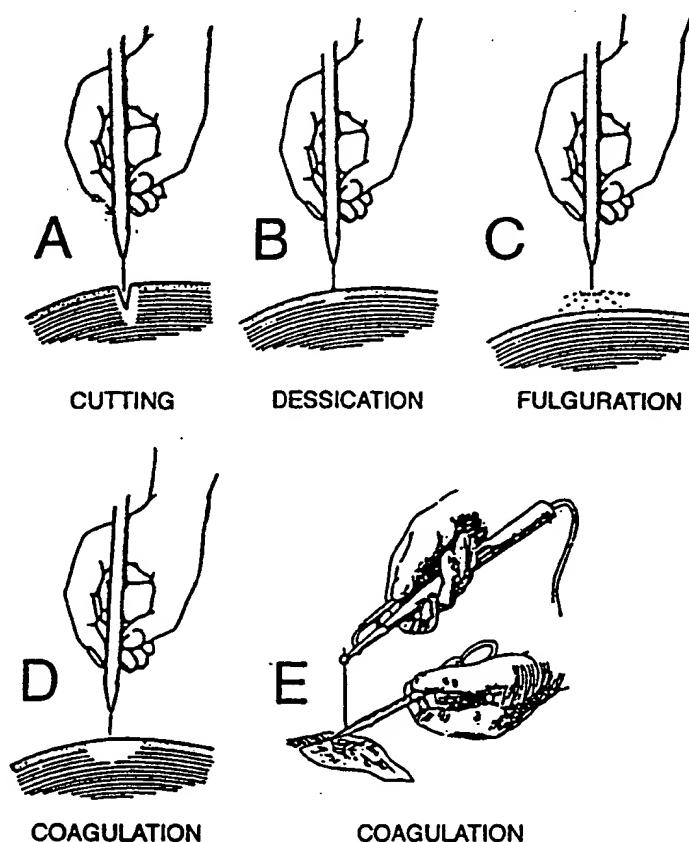


FIGURE 12 Tissue effects.

producing a scalpel-like cut; the permissible speed of cutting depends on the current intensity. However, the lips of the incision usually bleed and coagulation current is used to arrest the bleeding. In many ESUs, it is possible to combine (blend) cutting and coagulating current electrically so that coagulation accompanies cutting.

Honig (1975) has shown that the temperature at the tip of the electrode is high enough to boil tissue fluid, which causes the cells to burst. The arc represents a very localized source of heat so that the cutting is highly localized. In addition, the arc represents ionized gas (plasma), which has a low resistance. Therefore, as the cutting electrode is advanced, it is surrounded by steam and hot ionized gas which emits light.

DESICCATION

Desiccation (Figure 12B), i.e., drying, is produced by placing the tip of the probe in contact with the tissue and activating the ESU. Low current (of either type) can

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